

VI.3.5 EXTENDED STREAMFLOW PREDICTION INITIALIZATION PROGRAM (ESPINIT)

Introduction

The ESP Initialization Program (ESPINIT) is used to define the information needed to run ESP that is not stored in the Forecast Component Data Base.

The information defined includes time series information and information needed to define the analysis to be performed.

Command DEFSEG is used to define the ESP Segment information which is stored in the ESP parameter file.

The ESP Segment identifier must correspond to a Segment identifier that has already been defined in the Forecast Component files using program FCINIT. ESP obtains the information needed to determine the order of Segment execution, the list of operations for each Segment and the parameters for the Operations from the Forecast Component Data Base.

Time series must be redefined for ESP because the ESP time series are stored in different places than the time series used by the Operational Forecast Program (FCST). Both input and output time series for program FCST are stored in the Processed Data Base. Input time series for ESP (e.g. mean areal precipitation, mean areal temperature and observed mean daily discharge) are stored in historical data files and output time series (e.g., simulated instantaneous discharge) are written to binary files that are read by program ESPADP.

Time series are redefined for ESP so that the new external location information can be supplied. Any time series not defined for ESP will be assigned defaults based on the time series type (see Section VI.3.5-DEFSEG-DEF-TS [[Hyperlink](#)]).

The analysis information which may be defined includes:

- o the output variables (e.g., maximum mean daily value, cumulative value, etc.)
- o the time series to be analyzed
- o the displays to be provided (e.g., summary table and frequency table)
- o the display options

Commands

<u>Command</u>	<u>Purpose</u>
DEFSEG	Define an ESP Segment [Hyperlink]
DELSEG	Delete an ESP Segment [Hyperlink]

<u>Command</u>	<u>Description</u>
PRINT	Print ESP Segment definition information [Hyperlink]
PUNCH	Punch ESP Segment definition information [Hyperlink]
REDEFSEG	Redefine an ESP Segment [Hyperlink]
RUNCHECK	Check if all time series used by ESP Segments have been defined [Hyperlink]
STATUS	Print status of the ESP parameter file [Hyperlink]
STOP	Stop program execution [Hyperlink]

A description of each command and the input needed is on the following pages.

General Input Format

```

Header card (required)
Command card 1
  Subcommand card 1 (if any)
    Subcommand input
  Subcommand card 2
    Subcommand input
  Subcommand card n
    Subcommand input
Command card 2
  Subcommand card 1 (if any)
    Subcommand input
  Subcommand card 2
    Subcommand input
  Subcommand card n
    Subcommand input
Command card n
'STOP'

```

Program Execution Information

See Chapter I.2 [[Hyperlink](#)] for program execution information.

Error Messages

The following are warning and error messages printed by program ESPINIT:

1. ****ERROR**** ESP RECORD NUMBER WAS LESS THAN 1 FOR SEGMENT XXXXXXXX FOR FORECAST COMPONENT RECORD NUMBER XXX. THE SEGMENT PROBABLY HAS NOT BEEN DEFINED FOR ESP.

Action: The Segment could not be located in the ESP parameter

file. Check the Segment name to be sure that the Segment has been defined.

2. ****ERROR**** SEGMENT XXXXXXXX IS ALREADY DEFINED.

Action: Use REDEFSEG command to redefine Segment.

3. ****ERROR**** SEGMENT XXXXXXXX HAS NOT BEEN DEFINED.

Action: First define Segment with DEFSEG command instead of trying to redefine.

4. ****ERROR**** THE FIRST SUBCOMMAND IS XXXXXXXX. IT SHOULD BE DEF-TS.

Action: Change first subcommand to DEF-TS.

5. ****ERROR**** XXXXXXXX. THIS IS AN INVALID SUBCOMMAND.

Action: Put in a valid subcommand.

6. ****ERROR**** SEGMENT XXXXXXXX NOT DEFINED, NOT ENOUGH SPACE ON THE PARAMETER FILE.

Action: The ESP parameter file must be enlarged.

7. ****ERROR**** XXXXXXXX IS NOT A VALID COMMAND.

Action: Put in a valid command. This message may be printed because of errors which occurred earlier in the input.

8. ****ERROR**** THE TSESP ARRAY IS OUT OF ORDER OR INCOMPLETE OR CONTAINS TIME SERIES NOT DEFINED IN THE TS ARRAY. CHECK THAT ALL NECESSARY TIME SERIES WERE PROPERLY DEFINED FOR THIS SEGMENT IN FCINIT AND ESPINIT. THE SEGMENT PROBABLY HAS BEEN REDEFINED IN FCINIT AND NOW MUST BE REDEFINED IN ESPINIT.

Action: Redefine ESP Segment.

9. ****ERROR**** THE ESP SEGMENT ID XXXXXXXX DOES NOT MATCH THE FORECAST SEGMENT ID XXXXXXXX.

Action: Check that forecast file identifier (in JCL) used is the same as the ESP file identifier.

10. ****ERROR**** XXXXXXXX IS AN INVALID TS TYPE. TSID=XXXXXXX.

Action: Make sure that time series type is one of the following: INPUT, UPDATE, OUTPUT, or INTERNAL and is in the proper columns when defining time series.

11. ****ERROR**** XXXX IS AN ILLEGAL DATA TYPE. TSID=XXXXXXX

Action: Make sure that a valid data type (i.e., QINE, SQME, etc.) is input in proper columns.

12. ****ERROR**** XXXXX IS AN ILLEGAL TIME INTERVAL. TSID=XXXXXXXX.

Action: Make sure that a valid time interval is input in proper columns. Time interval must be between 1 and 24 and be evenly divisible into 24.
13. ****ERROR**** A BLANK TSID IS NOT ALLOWED.

Action: Must use at least one character for inputting time series identifier
14. ****ERROR**** MISSING DATA IS NOT ALLOWED FOR DATA TYPE XXXX.

Action: Time series file type is 'MSNG'. Either the file or data type must change.
15. ****ERROR**** XXXXXXXX IS AN ILLEGAL GENERATE SUBCOMMAND (or TYPE).

Action: Use a valid generate subcommand such as CREAT-PE or BLEND-TS in the proper columns.
16. ****ERROR**** INVALID TIME SERIES FOR REPLACE PROCEDURE XXXXXXXX
XXXX XX

Action: Check to be sure time series conform to those specified in input summary for REPL under DEF-TS subcommand.
17. ****ERROR**** XXXXXXXX XXXX XX HAS AN ILLEGAL FILE TYPE.

Action: Check to be sure a valid file type is input in proper columns. Valid types are CALB, ESP, MSNG, GENR, or REPL.
18. ****ERROR**** NEW TS TYPE IS ILLEGAL FOR TS XXXXXXXX XXXX XX.

Action: To use this time series, it must be defined as UPDATE or INPUT in ESP since it is an update type in the forecast component.
19. ****ERROR**** XXXX IS NOT A VALID VARIABLE TYPE.

Action: Make sure a valid variable type (i.e., MXMD, MNMD, etc.) is input in proper columns.
20. ****ERROR**** XXXXXXXX IS NOT A VALID DISPLAY TYPE.

Action: Make sure a valid display type (i.e., SUMMARY, FREQUENCY, etc.) is input in proper columns.
21. ****ERROR**** TIME SERIES XXXXXXXX XXXX XX WAS NOT FOUND.

Action: Make sure this time series is defined for ESP. Also, check that ID, data type, and time interval are in proper columns.
22. ****ERROR**** PRINT SEG (or RUNCHECK) TYPE IDENTIFIER DOES NOT

CONFORM TO ANY ALLOWABLE TYPE. PRINT SEG (or RUNCHECK) IGNORED.

Action: Make sure a valid type (CGROUP, FGROUP, or SEGMENT) is input in the proper columns.

23. **ERROR** MAX NUMBER OF TIME SERIES XX READ WITHOUT ENCOUNTERING AN END CARD.

Action: Reduce number of time series for HISTFILE Subcommand or call your Focal Point to allow for more time series.

24. **ERROR** TIME INTERVAL IS XX AND IS LESS THAN THE MINIMUM DELTA T ALLOWED XX. TO ALLOW SMALLER DELTA-T MUST CHANGE THE ARRAY DATA AND VARIABLE MDV IN MAIN PROGRAM. HISTFILE MUST ABORT.

Action: Increase time interval or call your Focal Point to re-dimension array.

25. **ERROR** MAX NUMBER OF FLOW TIME SERIES EXCEEDED=XX.

Action: Reduce the number of discharge time series or call your Focal Point to allow for more time series.

26. **ERROR** TIME PERIOD OF TIME SERIES XX-XXXX XX-XXXX NOT COMPATIBLE WITH RUN PERIOD.

Action: Change time period of the historical file or eliminate time series.

27. **ERROR** TIME SERIES MUST BE TEMP OR PRECIP FOR BLEND-TS. ILLEGAL DATA-TYPE-XXXX FOR ID-XXXXXXXX.

Action: For blending, input only temperature or precipitation type time series.

28. **ERROR** FORECAST TIME SERIES XXXXXXXX XXXX XX WAS NOT FOUND.

Action: Check that time series was input properly and then that it does exist in the forecast component.

29. **ERROR** FORECAST TIME SERIES XXXXXXXX XXXX XX WILL NOT ALLOW BLENDING.

Action: Check the file type and data type for forecast time series to be sure it is input or update and in the Processed Data Base.

30. **ERROR** TIME INTERVALS NOT COMPATIBLE: BLENDED=XX FUTURE=XX HISTORICAL=XX

Action: Check time intervals to be sure that the historical interval equals the blended and the blended is an even multiple of the future.

31. **ERROR** THE DTYPE FOR THE HISTORICAL DATA XXXX IS NOT

COMPATIBLE WITH TS XXXX XXXX XXXX XX.

Action: Check to be sure that data type for the historical time series is a precipitation or temperature type.

32. **ERROR** OUTPUT VARIABLE: XXXX XXXXXXXX IGNORED.
INCOMPATIBLE UNITS XXXX AND XXXX.

Action: Change time series used or the output variable type if analysis is still desired.

33. **ERROR** OUTPUT VARIABLE. XXXX XXXXXXXX IGNORED. TIME SCALES
MUST BE INST NOT XXXX.

Action: Make sure that only instantaneous type time series are used for output variables which analyze instantaneous values.

34. **ERROR** TIME SERIES XXXXXXXX XXXX XX - XXXXXXXX IS NOT A VALID
NAME.

Action: Check that the data type is for a multi-valued time series, and that the time series value name was entered correctly.

35. **ERROR** TIME SERIES WITH ID, DATA TYPE, AND TIME INTERVAL OF
XXXXXXXX XXXX XX WAS NOT FOUND IN THE FORECAST DEFINITION (TS
ARRAY), AND WILL NOT BE ADDED TO THE ESP DEFINITION (TSESP
ARRAY).

36. **WARNING** TIME SERIES XXXXXXXX XXXX XX WAS NOT DEFINED FOR ESP
AND IS ASSIGNED DEFAULT VALUES.

Action: If default is not satisfactory, then define the time series for ESP using DEF-TS subcommand.

37. **WARNING** INPUT DISTRIBUTION TYPE OF XX NOT ALLOWED.
THEREFORE DEFAULT TO LOG-NORMAL TRANSFORM.

Action: If this is not satisfactory, input a valid distribution type as specified in input summary.

38. **WARNING** THE FOLLOWING INPUT TIME SERIES HAS NOT BEEN DEFINED
AS OUTPUT ON THE ESP (SCRATCH) FILE;
ID=XXXXXXXX DTYPE=XXXX IDT=XX DESCRIPTOR=XXXXXXXXXXXXX
CHECK TO BE SURE THIS TIME SERIES IS ON PERMANENT FILE

Action: Check to be sure time series is on a permanent file, otherwise an error will result later.

39. **WARNING** INITIAL WEIGHT XXX.XX IS LESS THAN OR EQUAL TO
ENDING WEIGHT XXX.XX.

Action: Change weights unless this unlikely case is desired.

40. **WARNING** INITIAL WEIGHT XXX.XX IS GREATER THAN 1.

Action: Change initial weight so that it is between 0 and 1.

41. **WARNING** TIME SERIES XXXXXXXXX XXXX XX. THE WEIGHT IS LIMITED TO XXXX HRS. THE LENGTH OF THE WEIGHTING PERIOD REQUESTED IS XXXX HRS AND BLEND IS XXXX DAYS.

Action: Reduce the weighting (or blending) period requested.

42. **WARNING** OUTPUT VARIABLE: XXXX XXXXXXXXX DTYPES: XXXX XXXX WILL BE CONVERTED TO MEAN DAILY VALUES.

Action: Change analyses or time used if this conversion is not satisfactory.